

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Please cancel claims 12 to 13 and 20 without prejudice or disclaimer.

Please amend claims 10, 11, 18, 19, 26, 28 and 29 as follows:

Claims 1 to 9 (cancelled)

10. (currently amended) An isolated protein with ~~[an apparent]~~ a molecular weight of about 24 kDa and an isoelectric point of about less than 4.5, comprising an N-terminal amino acid sequence which ~~[displays at least 90 percent amino acid sequence identity with]~~ contains up to two conservative amino acid substitutions in SEQ ID NO: 1 or 2, wherein the protein displays substantial ice recrystallization inhibitory activity.

11. (currently amended) The isolated protein of claim 10 wherein the N-terminal amino acid sequence ~~[displays at least 95 percent amino acid sequence identity with]~~ contains one conservative amino acid substitution in SEQ ID NO: 1 or 2.

Claims 12 to 13 (cancelled).

14. (previously presented) The isolated protein of claim 10 wherein the N-terminal amino acid sequence comprises SEQ ID NO: 1.

15. (previously presented) The isolated protein of claim 10 wherein the N-terminal amino acid sequence comprises SEQ ID NO: 2.

16. (previously presented) The isolated protein of claim 10 wherein the protein is glycosylated.

17. (previously presented) The isolated protein of claim 10 wherein 0.01 percent of the protein present in a 30 percent sucrose solution cooled to minus 80°C and then heated to minus 6°C yields an increase in ice crystal size of less than 20 percent when the solution is kept at minus 6°C for 30 minutes.

18. (currently amended) An isolated protein produced by the method of:

- (a) preparing a solution extract of *Umbilicaria antarctica*,
- (b) isolating a fraction of the solution extract that displays substantial ice recrystallization inhibitory activity,
- (c) isolating a sample of proteins with ~~[an apparent]~~ a molecular weight of about 24 kDa and an isoelectric point of less than 4.5 from said fraction of solution extract, and
- (d) isolating a protein with an N-terminal amino acid sequence which ~~[displays at least 90 percent sequence identity to]~~ contains up to two conservative amino acid substitutions in SEQ ID NO: 1 or 2 from said sample of proteins.

19. (currently amended) The isolated protein of claim 18 wherein the N-terminal amino acid sequence ~~[displays at least 95 percent amino acid sequence identity with]~~ contains one conservative amino acid substitution in SEQ ID NO: 1 or 2.

Claim 20 (cancelled).

21. (previously presented) The isolated protein of claim 18 wherein the N-terminal amino acid sequence comprises SEQ ID NO: 1.

22. (previously presented) The isolated protein of claim 18 wherein the N-terminal amino acid sequence comprises SEQ ID NO: 2.

23. (previously presented) The isolated protein of claim 18 wherein the protein is glycosylated.

24. (previously presented) The isolated protein of claim 18 wherein 0.01 percent of the protein present in a 30 percent sucrose solution cooled to minus 80°C and then heated to minus 6°C yields an increase in ice crystal size of less than 20 percent when the solution is kept at minus 6°C for 30 minutes.

25. (previously presented) The isolated protein of claim 18 wherein the fraction of the solution extract that displays substantial ice recrystallization inhibitory activity is isolated by column chromatography.

26. (currently amended) The isolated protein of claim 18 wherein the sample of proteins with ~~[an~~
~~apparent]~~ a molecular weight of about 24 kDa is isolated by gel electrophoresis.

27. (previously presented) The isolated protein of claim 18 wherein the sample of proteins with an
isoelectric point of about less than about 4.5 is isolated by isoelectric focusing.

28. (currently amended) An isolated protein with ~~[an apparent]~~ a molecular weight of about 24
kDa and an isoelectric point of about less than 4.5, comprising an N-terminal amino acid sequence
comprising SEQ ID NO: 1, wherein the protein displays substantial ice recrystallization inhibitory activity.

29. (currently amended) An isolated protein with ~~[an apparent]~~ a molecular weight of about 24
kDa and an isoelectric point of about less than 4.5, comprising an N-terminal amino acid sequence
comprising SEQ ID NO: 2, wherein the protein displays substantial ice recrystallization inhibitory activity.

30. (previously presented) A composition comprising the isolated protein of any one of claims 10,
18, 28 or 29.

31. (previously presented) The composition of claim 30 wherein the amount of isolated protein in
the sample is about 0.00001 to about 0.5 percent weight.